

In the Claims

1. (Original) A process for the production of titanium dioxide comprising the following steps:
 - (a) a titanium ore containing iron is reacted with an aqueous NH₄F solution;
 - (b) the aqueous suspension thus obtained is filtered with consequent separation of a sludge fraction and a filtrate fraction;
 - (c) the filtrate fraction thus obtained is subjected to an hydrolysis reaction;
 - (d) the thus-obtained solid component is subjected to a thermal hydrolysis reaction.
2. (Original) A process according to claim 1, wherein the sludge fraction of step (b) contains ammonium fluoroferates.
3. (Currently Amended) A process according to ~~any one of the preceding claims, characterized in that claim 1, wherein~~ the filtrate fraction of step (b) contains ammonium fluorotitanates.
4. (Currently Amended) A process according to ~~any one of the preceding claims, characterized in that claim 1, wherein~~ step (a) is performed at 100-120°C.
5. (Currently Amended) A process according to ~~any one of the preceding claims, characterized in that claim 1, wherein~~ step (a) is performed at a pressure of about 1-2 bar.
6. (Currently Amended) A process according to ~~any one of the preceding claims, characterized in that claim 1, wherein~~ step (a) is performed at a pH of about 6.5-7.0.
7. (Currently Amended) A process according to ~~any one of the preceding claims, characterized in that claim 1, wherein~~ the aqueous NH₄F solution has a concentration of 30-60% by weight; preferably about 45%.

8. (Currently Amended) A process according to ~~any one of the preceding claims, characterized in that the thermal hydrolysis reaction (c) is performed in two reactors~~ claim 1, wherein the aqueous NH₄F solution has a concentration of about 45% by weight.

9. (Currently Amended) A process according to claim 8, ~~characterized in that the first reactor is maintained at a temperature of up to 350° C.~~ 1, wherein the thermal hydrolysis reaction (d) is performed in two reactors.

10. (Currently Amended) A process according to claim 8, ~~characterized in that 9, wherein~~ the first reactor is maintained at a temperature of up to ~~300°–350° C.~~

11. (Currently Amended) A process according to claim 8, ~~characterized in that 9, wherein~~ the ~~first second~~ reactor is maintained at a temperature of up to 300-350 900° C.

12. (Currently Amended) A process according to claim 8, ~~characterized in that 9, wherein~~ the second reactor is maintained at a temperature of up to 800-900° C.

13. (Currently Amended) A process according to claim 8, ~~characterized in that the body of the first and/or second reactor is made of a chromium-nickel alloy~~ 9, wherein the second reactor is maintained at a temperature of up to 800-900° C.

14. (Currently Amended) A process according to claim 8, ~~characterized in that the internal surface of the first reactor is made of magnesium or a graphite-reinforced polymer or vitreous carbon~~ 9, wherein the body of the first and/or second reactor is made of a chromium-nickel alloy.

15. (Currently Amended) A process according to claim 8, ~~characterized in that the internal surface of the second reactor is made of silica~~ 9, wherein the internal surface of the first reactor is made of magnesium or a graphite-reinforced polymer or vitreous carbon.

16. (Currently Amended) A process according to ~~any one of the preceding claims, characterized in that the aqueous dispersion obtained from the hydrolysis reaction (c) is filtered before the thermal hydrolysis reaction (d)~~ claim 9, wherein the internal surface of the second reactor is made of silica.

17. (Currently Amended) A process according to ~~any one of the preceding claims, characterized in that the sludge fraction of step (b) is subjected to a thermal hydrolysis reaction~~ claim 1, wherein the aqueous dispersion obtained from the hydrolysis reaction (c) is filtered before the thermal hydrolysis reaction (d).

18. (Currently Amended) A process according to claim 17, characterized in that said thermal hydrolysis is performed at a temperature of up to 300-350° C 1, wherein the sludge fraction of step (b) is subjected to a thermal hydrolysis reaction.

19. (Currently Amended) A process according to ~~claims 17-18, characterized in that the sludge fraction of step (b) is dehydrated and dried before being subjected to said thermal hydrolysis~~ claim 18, wherein said thermal hydrolysis is performed at a temperature of up to 300-350° C.

20. (Currently Amended) A process according to ~~any of the preceding claims, characterized in that the titanium ore containing iron is ilmenite~~ claim 18, wherein the sludge fraction of step (b) is dehydrated and dried before being subjected to said thermal hydrolysis.

21. (New) A process according to claim 1, wherein the titanium ore containing iron is ilmenite.